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TRADE AND DEVELOPMENT BOARD
Commission on Trade in Goods and Services, and Commodities
Expert Meeting on Trade and Investment Impacts of Environmental Management Standards, Particularly the ISO 14000 Series, on Developing Countries
Geneva, 29-31 October 1997
Item 2 of the provisional agenda

ADOPTION OF THE AGENDA

Provisional agenda and annotations

I. Provisional agenda

1. Election of officers
2. Adoption of the agenda
3. Possible trade and investment impacts of environmental management standards, particularly the ISO 14000 series, on developing countries, and opportunities and needs in this context
4. Adoption of the report

GE.97-51487

II. Annotations to the provisional agenda

Item 1: Election of officers

It is recommended that the Expert Meeting elect a Chairperson and a Vice-Chairperson-cum-Rapporteur.

Item 2: Adoption of the agenda

The provisional agenda for the Meeting is in section I above. The schedule of meetings for the three days is attached to this document.

Documentation

TD/B/COM.1/EM.4/1	Provisional agenda and annotations

Item 3: Possible trade and investment impacts of environmental management standards, particularly the ISO 14000 series, on developing countries, and opportunities and needs in this context

The Meeting is convened pursuant to a decision by the Commission on Trade in Goods and Services, and Commodities at the second part of its first session (19-21 February 1997). The objective is to "examine the operation, and the possible trade and investment impacts, of environmental management standards, particularly the ISO 14000 series, on developing countries, and the identification of possible opportunitiesand needs in this context".[1]

With a view to expediting substantive discussions of the Expert Meeting, the secretariat has prepared an issues paper entitled "Environmental management standards, particularly the ISO 14000 series: trade and investment impacts on developing countries" (TD/B/COM.1/EM.4/2).

The Expert Meeting is intended to enhance understanding of the issue under discussion, identify relevant factors determining the trade and investment effects of environmental management standards, in particular ISO 14001, on developing countries, and elucidate the types of policy choices that Governments and the business sector in developing countries are facing, or will be facing, in the context of environmental management standards, in particular in relation to issues in the field of international trade. The Expert Meeting could draw lessons from country-specific experiences.

In addition to an introductory session dealing with the operation of environmental management standards, the Expert Meeting could discuss four issues, as follows: (i) environmental management standards: possible trade and investment effects; (ii) certification and accreditation issues; (iii) needs of small and medium-sized enterprises (SMEs); (iv) needs of developing countries.

The results of the Expert Meeting will be submitted to the Commission on Trade in Goods and Services, and Commodities, at its second session (17-21 November 1997) for action.

Documentation

TD/B/COM.1/EM.4/2	"Environmental management standards, particularly the ISO 14000 series: trade and investment impacts on developing countries".

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[1] Report of the Commission on Trade in Goods and Services, and Commodities on its first session (TD/B/44/5 - TD/B/COM.1/6), annex I, part B, par. 3(b).

Item 4: Adoption of the report

The Expert Meeting will adopt its recommendations/findings/conclusions at the end of the session. The final report will be compiled under the authority of the Chairperson after the conclusion of the Meeting.

Schedule of meetings

Wednesday, 29 October	Thursday, 30 October	Friday, 31 October
10 a.m. Plenary: Opening of the Meeting Election of officers Adoption of the agenda Informals: Item 3	10 a.m. Informals (cont'd): Item 3	10 a.m. Informals (cont'd): Item 3
3 p.m. Informals (cont'd): Item 3	3 p.m. Informals (cont'd): Item 3	3 p.m. Informals (cont'd): Consideration of the draft text of recommendations or conclusions Plenary (closing): Adoption of the report

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TRADE AND DEVELOPMENT BOARD

COMMISSION ON TRADE IN GOODS AND SERVICES, AND COMMODITIES
Expert Meeting on Trade and Investment Impacts of Environmental Management Standards, particularly the ISO 14000 series, on Developing Countries
Geneva, 29-31 October 1997
Item 3 of the provisional agenda

ENVIRONMENTAL MANAGEMENT STANDARDS, PARTICULARLY THE ISO 14000 SERIES: TRADE AND INVESTMENT IMPACTS ON DEVELOPING COUNTRIES

Report prepared by the UNCTAD secretariat

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GE.97-51471

I. INTRODUCTION

A. Background

1. The Expert Meeting is being convened "to examine the operation, and the possible trade and investment impacts, of environmental management standards, particularly the ISO 14000 series, on developing countries, and the identification of possible opportunities and needs in this context".[1]

2. Environmental management standards, such as the ISO 14000 series, comprise a range of standards, including those relating to environmental management systems (EMS) and eco-labelling (see box 1). This note focuses on standards for EMS, while eco-labelling is referred to only briefly, having been extensively covered in previous UNCTAD secretariat reports.[2]

3. International EMS standards can be beneficial for both firms and Governments. ISO 14001 provides a basis for certifying a firm's EMS, which may promote greater credibility with overseas clients and the Government. The setting-up of an EMS and the continual environmental improvements encouraged by ISO 14001 may also induce cost savings, e.g. through reduced input costs resulting from a more efficient use of materials and energy. The Government may also benefit from the greater emphasis on environmental policy at the company level, which may alleviate the task of enforcement officers, increase the cost-effectiveness of pollution control and allow Governments to focus attention on other priority areas.

4. However, despite its voluntary nature, there is also concern that ISO 14001 certification may become a de facto condition for doing business, at least in certain sectors, in a manner similar to the development of ISO 9000 quality management standards.[3] The ISO 14001 standard may result in a de facto barrier to trade if companies have difficulties in obtaining certification. It is frequently argued that the associated costs may be higher for companies in developing countries than for their competitors in developed countries, due to factors such as the lack of existing management structures, the novelty of EMS in many developing countries insufficient infrastructure, and high certification and auditing costs if companies have to rely on international consultants and registrars.[4] Small and medium-sized enterprises (SMEs), in both developing and developed countries, tend to face larger difficulties in setting up EMS.

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[1] The Expert Meeting is being convened by UNCTAD's Commission on Trade in Goods and Services, and Commodities, further to a decision taken at its session in February 1997. UNCTAD, TD/B/44/5 - TD/B/COM.1/6.

[2] "Eco-labelling and market opportunities for environmentally friendly products" (TD/B/WG.6/2, October 1994) and "Trade, environment and competitiveness aspects of establishing and operating eco-labelling programmes" (TD/B/WG.6/5, August 1995). An UNCTAD secretariat seminar on "Eco-labelling and international trade" was conducted in 1994. The results have been published in Simonetta Zarrilli, Veena Jha and René Vossenaar (editors), Eco-labelling and International Trade, Macmillan Press Ltd., United States, St. Martin's Press, United Kingdom, 1997.

[3] See, for instance: UNIDO, Trade Implications of International Standards for Quality and Environmental Management Systems, Geneva, 1996. UNIDO is carrying out a new survey on the trade effects of ISO 9000 and ISO 14000 standards.

[4] Some have observed that there are no provisions acknowledging differing conditions amongst firms, sectors, or geographical locations. Similarly, there is no recognition that countries at different stages of development have varying degrees of technical expertise and financial resources. As a comparison, the European Union Eco-Management and Audit Scheme (EMAS) explicitly recognises the constraints faced by SMEs and contains some special concessions in this regard. Others, however, have stressed that ISO 14001 is meant for all types and sizes of firms.

Box 1: ISO 14000 series of international standards

Environmental management systems
ISO 14001 Specification with guidance for use'
ISO 14004 General guidelines on principles, systems and supporting techniques'

Guidelines for environmental auditing
ISO 14010 General principles'
ISO 14011 Audit procedures - Auditing of environmental management systems'
ISO 14012 Qualification criteria for environmental auditors'

Environmental labels and declarations
ISO 14020 General principles''
ISO 14021 Self-declaration environmental claims - Guidelines and definition and usage of terms''
ISO 14022 Self-declaration environmental claims - Symbols'''
ISO 14023 Testing and verification methodologies for application in environmental labelling (Type II)'''
ISO 14024 Practitioner programmes - Guiding principles, practices and certification procedures of multiple criteria (Type I) programmes'''

Environmental performance evaluation
ISO 14031 Environmental management - Guidance on environmental performance evaluation'''

Environmental management - Life cycle assessment
ISO 14040 Principles and framework''
ISO 14041 Inventory analysis''
ISO 14042 Life cycle impact assessment'''
ISO 14043 Life cycle improvement assessment'''

Vocabulary
ISO 14050 Environmental management - Vocabulary''

' = published '' = circulated for voting ''' = working and committee draft

5. Whether and how ISO 14001 can influence trade depends on many factors. What is useful is to analyse whether developing country producers face special difficulties in obtaining EMS certification, and if so, how these could be mitigated. As ISO 14001 has been finalised as an international standard, setting priorities at the national and company levels may be an issue for Governments and the business community.

B. Status of the ISO 14000 series

6. The ISO 14000 series comprises over 20 standards. Five standards are relevant for EMS. The core EMS standards are ISO 14001, an auditable specification for an EMS, and ISO 14004, an EMS guidance document. In addition, there are three auditing standards: ISO 14010 (general principles), ISO 14011 (auditing of EMS) and ISO 14012 (qualification for environmental auditors) for internal and external parties to determine if all the required EMS elements are present and operating effectively in an organization.

7. These EMS standards have already been adopted as international standards. ISO 14001 and ISO 14004 were published in September 1996 and the three auditing standards in October 1996. Deliberations in the Expert Meeting will thus have no impact on the development of these standards. However, the discussions in the Meeting could be useful for the implementation of these standards and related policies at the national level; further analyses could also be relevant in the context of the review of ISO 14001 in 1999.

8. The ISO 14000 series also comprises standards for environmental labelling, environmental performance evaluation, life cycle assessment, and the related terms and definitions. At the time of writing, these standards are still being developed.

C. Relationship with issues in the WTO

9. The discussion on the practical experience with EMS and its comparison with other policy instruments, such as eco-labelling, may provide some insight on outstanding issues in the trade and environment debate in the WTO, in particular the Committee on Trade and Environment (CTE) and the Technical Barriers to Trade (TBT) Committee. Such outstanding issues include the following:

(a) Would the ISO 14000 standards be considered as relevant international standards in the context of the TBT Agreement and its Code of Good Practice?

(b) How do standards on EMS and eco-labelling deal with the issue of non-product related process and production methods (PPMs) and how do they relate to the TBT Agreement and its Code of Good Practice?

(c) What is the role of concepts such as mutual recognition and equivalency in the context of voluntary standards?

10. With regard to (a), although the TBT Agreement and its Code of Good Practice refers to international standards, it does not include a definition of what constitutes an international standard. In the context of preparations for the first Triennial Review of the Agreement, some have noted that it may be necessary to arrive at such a definition. In this connection, it has been noted that developing countries have, in general, not participated actively in the drafting of the ISO 14000 standards.[5] Indeed, in the context of CTE deliberations, some developing countries have "expressed concern about the ISO process and the difficulties for some WTO Members, particularly developing countries, to participate effectively in it because of the considerable resource commitments it involves. Consequently, they do not consider that the ISO standards currently being developed in this field take their trade interests adequately into account".[6] It follows that enhancing the effective participation of developing countries in the ISO standard-setting process remains essential.[7]

11. With regard to (b), deliberations in the CTE have focused on the coverage of eco-labelling programmes based on life cycle analysis (LCA) under the TBT Agreement. Views differ among WTO Members. The CTE has nevertheless stressed the importance of WTO Members following the provisions of the Agreement, including those on transparency, "without prejudice to the views of WTO Members concerning the coverage and application of the TBT Agreement to certain aspects of such voluntary eco-labelling schemes/programmes and criteria, i.e. those aspects concerning non-product-related PPMs, and therefore to the obligations of Members under this Agreement regarding those aspects".[8]

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[5] ISO is a private standardization organization and its members are national standardization bodies. While all developed countries have membership in the ISO, only 50 developing countries are full members and only 25 have voting rights in Technical Commission (TC) 207.

[6] See WTO, Report (1996) of the Committee on Trade and Environment, para. 167. PRESS/TE 014, 18 November 1996.

[7] In this context, Article 12.5 of the TBT Agreement provides that "Members shall take all reasonable measures as may be available to them to ensure that international standardizing bodies and international systems for conformity assessment are organized and operated in a way which facilitates active and representative participation of relevant bodies in all Members, taking into account the special problems of developing country Members".

[8] WTO, op. cit., para. 185

12. ISO 14001 has the advantage over other policy instruments, such as eco-labelling, of not having specific PPM-related criteria or requirements set by the importing country. ISO 14001 is not a performance standard. Although there are detailed requirements concerning environmental policies, programmes, management systems and environmental auditing, the specific environmental criteria to be fulfilled depend on the regulatory requirements relevant to the site or country and the company's environmental policy and targets.

13. With regard to (c), i.e. concepts such as mutual recognition and equivalency, mutual recognition has been recognized as a useful tool in the relevant ISO 14000 standards. Attempts to include equivalency in the ISO guidelines have not been successful. Similarly, the Code of Good Practice does not contain a provision on equivalency. Some have suggested that it may be useful to examine to what extent the characteristics of the ISO 14001 standard may be useful to help develop the concept of equivalency.

14. While recognising the utility of using international standards for harmonisation purposes, some feel that attention should also be given to the difficulties that developing countries could have in implementing these standards. Article 12 of the Agreement on the special and differentiated treatment of developing countries could be recalled in this regard. It has also been proposed that the TBT Committee should undertake a study of the potential trade effects of certain international standards.

II. OPERATION OF ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS)

A. Environmental management systems (EMS)

15. EMS are based on a set of voluntary rules that companies can adhere to in order to better control the environmental impact of their activities on the basis of self-determined environmental policies and objectives. An EMS is interpreted as the organizational structure, including practices, processes, resources and responsibilities, for implementing environmental management.[9]

16. The establishment and maintenance of an effective EMS enables an organization to anticipate and meet growing environmental performance expectations, to ensure ongoing compliance with national and/or international environmental requirements and to support the continual improvement of its environmental performance.[10]

17. Developed countries are generally familiar with the concept of voluntary EMS standards. The British BS 7750 was created in 1992, followed by the European Union Eco-Management and Audit Scheme (EMAS) in 1993. Industry associations have also been developing performance codes such as the Responsible Care Programme of the United States Chemical Manufactures Associations and the Environmental Self-Assessment Programme of the Global Environmental Management Initiative. ISO 14001 has been developed as an international standard to avoid the proliferation of different regional and national EMS.

18. ISO 14001 provides organizations with specific guidelines on how to implement and improve an EMS. The following core elements should be implemented: an environmental policy,[11] environmental planning, implementation and operation, regular checking and corrective action, and a management review.

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[9] UNDP, "ISO 14000 Environmental Management Standards and Implications for Exporters to Developed Markets", New York, United States, 1996, page 5.

[10] UNIDO, op. cit., page 12.

[11] A statement by the organization of its intentions and principles in relation to its overall environmental performance. The environmental policy must commit the organization to regulatory compliance, pollution prevention and "continual improvement". It must also be appropriate to the nature and scale of the organization's operations. This implies that the organization cannot ignore significant environmental issues.

B. Sector-specific standards on EMS

19. ISO 14001 is a generic EMS standard, designed to apply to every type and size of organization. Some industry sectors, however, feel that the generic approach may not reflect their particular situation and needs. There has been some pressure for the development of sector-specific standards. Previously, similar pressure led to the establishment of ISO TC/210 for quality management in medical devices, as well as the development (outside ISO) of the QS 9000 quality standard by a group of large automobile producers.

20. The forest industry has been a strong proponent of a sector-specific guidance standard within ISO 14001. After much debate, a decision was taken by TC 207 to develop a bridging document - a guide that would provide information on the application of ISO 14001 to forest management. This document is currently being developed by ISO under Working Group 2 on Forestry, with the involvement of developing countries and representatives of environmental groups.[12]

C. Environmental management standards as a tool of environmental policy

21. Promoting the wider use of EMS could result in environmental benefits. An effective EMS assists an organization in formulating an environmental policy and objectives, taking into account legislative requirements and information about significant environmental aspects. It applies to those environmental impacts which the organization can control and over which it can be expected to have an influence. The ISO 14001 standard, however, does not state specific environmental performance criteria. Thus, the establishment and operation of ISO 14001 does not, by itself, guarantee enhanced environmental performance.

22. Some have criticized ISO 14001 for this. Others, however, have noted that setting performance-based standards is an issue for national policy-making, and not for ISO. Some have also criticised ISO 14001 for not being a "state-of-the-art" EMS standard, while others have noted that ISO 14001 is intended for broad application.[13]

23. There is still discussion on the extent to which EMS could help improve compliance with environmental laws and regulations, and to what extent EMS can facilitate a shift from "command and control" approaches to a balance of regulation and preventive approaches. In some countries the larger use of EMS may have to be accompanied by investment in environmental infrastructure and the establishment of a comprehensive regulatory framework in order to result in significant environmental benefits.

24. Several countries are currently studying how to integrate EMS into environmental policies. In the Netherlands, the Government may issue a so-called "outline license" to companies which have a certified EMS in place. This license contains significantly fewer regulations and addresses the environment at the level of objectives and parameters. The company itself determines how to comply with the

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[12] James Dixon, Secretary, ISO/TC 207, "ISO 14000 Management Standards for the Environment", paper presented at the Asia-Pacific Economic Cooperation (APEC) Seminar on Environmental Management Standards and their Implications for Global Trade, Singapore, 29 and 30 April 1997.

[13] Others have noted that a standard such as ISO 14001 must on the one hand be flexible enough to be used in different situations and by all types of organizations, but on the other hand strict enough to ensure that the system leads to an improvement in an organization's environmental performance. Dirk Hortensius and Mark Barthel, "An Introduction to the ISO 14000 series", in Christopher Sheldon (ed.), ISO 14001 and Beyond: Environmental Management Systems in the Real World, Greenleaf Publishing, United Kingdom, 1997.

objectives.[14] In China, the National Environmental Protection Agency has adopted ISO 14001 as part of its overall environmental policy strategy, and the Government encourages both state and private industries to adopt and register an EMS.[15] In Mexico, the National Ecological Institute is designing a license ("licencia ambiental unica") that makes special provisions for companies that have certified environmental management systems in place.[16]

III. COSTS AND BENEFITS OF EMS STANDARDS

A. Costs of conformity with ISO 14001

25. Two elements are important in determining the costs of participation in the ISO 14000 certification standard: (a) the incremental costs in meeting the requirements of an EMS like ISO 14001 (e.g. setting up and maintaining an EMS, hiring consultants, meeting company-determined performance goals); and (b) costs of certification and registration to ISO 14001.

26. These costs vary considerably from case to case, depending on the initial conditions within an organization, as well as conditions external to the organization, such as the availability of infrastructure. A UNDP study shows that the prospective costs of compliance with ISO 14001 standards may be high for individual companies in developing countries, particularly if they have not got a formal management system in place, if they are not in compliance with the existing environmental regulations, and if they have to rely on the services of expensive consultancy firms.[17]

27. For an organization with an EMS in place, fulfilling the requirements to participate in ISO 14001 may be relatively easy. For others however, implementing and maintaining an EMS involves a complex and time-consuming documentation process. In addition, companies participating in ISO 14001 may be expected to go beyond the levels of environmental stringency established by law by committing themselves to continual improvement of their EMS.

28. Developing country firms could face some cost disadvantages with the adoption of an EMS. First, ISO 14001 describes a management system that is in tune with contemporary management systems in the developed countries. Developing country firms that do not have a management system in place may have significant difficulties in implementing relatively sophisticated management systems. Second, while in developed countries information on applicable laws and regulations can be obtained through well used channels, developing country firms may face higher costs in collecting full information on the often complex set of applicable laws and regulations. Third, while environmental assessments and analyses are routinely required in developed countries, firms in developing countries may have to incur significant expenses in identifying environmental aspects and impacts.[18]

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[14] Ministry of Housing, Spatial Planning and the Environment, "Company environmental management as a basis for a different relationship between companies and governmental authorities", 1995, The Hague, Netherlands.

[15] "China adopts 14001 as State Policy", "China Begins Third Phase of ISO 14001 Program", 1997, globeNet, http://www.iso14000.net, Global Environment & Technology Foundation, Annandale, VA, United States.

[16] "World Bank Funds Mexican ISO 14000 Project", globeNet.

[17] UNDP, op. cit..

[18] The identification of environmental aspects and impacts is a key element in the development and implementation of an EMS. This has been cited as one of the most difficult aspects of the standard in relation to implementation and auditing. See, for example, Norafiza Saim, "Development and Implementation of Environmental management System - Malaysia's Experience", paper presented at the APEC Seminar, and P. Strachan et al., "The eco-management and audit scheme: recent experiences of UK participating organizations", 1997, *European Environment*, Vol. 7, John Wiley & Sons, Chichester, United Kingdom.

29. The requirement that an organization should commit itself to comply with all applicable environmental regulations may imply that the organization has to incur additional capital and operational costs. The term "applicable environmental regulations" refers to national and/or local environmental regulations in the country of production. Any incremental costs thus depend on two factors: (a) the organization's degree of compliance with applicable environmental regulations and (b) the stringency of environmental regulations in the country of production. Its potential to improve regulatory compliance is an important advantage of an EMS, in particular where environmental laws and regulations are realistic in the context of local environmental and developmental conditions. Establishing a realistic and effective regulatory environment may be an important complement to the promotion of EMS standards.

B. Possible economic benefits

30. A recent study[19] lists the following potential "internal benefits" of an EMS: reduced environmental incidents and liability, increased efficiency, improved environmental performance, and improved corporate culture. As yet, uncertainty exists about the significance of improvements in economic performance following the implementation of EMS. This underlines the importance of an objective assessment of financial benefits.

31. There are several other potential benefits attached to EMS. For example, Governments may make special provisions for companies that have an EMS in place, which may bring about significant cost savings to companies. Certification may also increase shareholder value, and this is, for example, one reason why companies in the process of privatization are interested in EMS. Finally, banks and insurance companies may request EMS registration, and insurance premiums, credit conditions and treatment of liability may become differentiated between registered companies and others.

C. Empirical evidence on costs and benefits

32. As yet, not much empirical evidence exists about the actual costs and benefits of EMS, especially not in developing countries. The findings of existing surveys are inconclusive and sometimes contradictory. For example, in the United Kingdom, a survey among 11 organizations and 18 sites having received accreditation for EMAS showed that the initial costs of meeting the requirements of EMAS ranged from US$ 40,000 to US$ 473,600, with an average of US$ 151,360. Ongoing costs ranged from US$ 4,800 to US$ 40,000 per year, with an average of US$ 16,693. The respondents in this survey claimed they had secured "significant financial savings", but they were unable to quantify the savings.[20] However, another survey among 420 manufacturing and processing companies in South Wales, United Kingdom, noted that only 39 per cent of the large companies and 18 per cent of the SMEs agreed that environmental improvements lead to increased profits and reduced costs and that this would be a source of motivation to make such improvements. Most benefits where expected in the food and chemicals sectors. Research in Leicestershire, United Kingdom, showed that annual first-year savings arising from waste minimisation initiatives are around 0.3 per cent. For companies with less than US$ 3.5 million turnover, the waste minimisation effort would not be considered beneficial.[21]

33. A survey among 29 Austrian EMAS comp nies and 14 consulting firms showed an average cost related to EMS implementation of US$ 250,000, of which US$ 170,000 consisted of internal costs and US$ 80,000 external project costs. The average

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[19] International Institute for Sustainable Development (IISD), Global Green Standards: ISO 14000 and Sustainable Development, Canada, 1996, page 15.

[20] P. Strachan et al., op. cit.; exchange rate used: £1 = US$ 1.6.

[21] R.N. Baylis et al., Environmental Regulation and Management: A Preliminary Analysis of a Survey of Manufacturing and Processing Companies in Industrial South Wales, 1997, Papers in Environmental Planning Research, Number 14, Department of City and Regional Planning, University of Wales, Cardiff, United Kingdom.

internal costs declined with the size of the company, while the external costs remained nearly stable. The same survey revealed that introduction of an EMAS had led to average annual savings of US$ 208,000 per company, making the payback period 14 months.[22]

D. Certification and accreditation issues

34. Certification issues have a considerable bearing on the ability of ISO 14001 to act as a barrier to trade. Certification can be relatively expensive, particularly if national certification and accreditation bodies are non-existent, or if self-certification or certification by national bodies is not accepted in overseas markets. It follows that conformity assessment is a major implementation issue, particularly from a trade perspective.

35. ISO 14001 provides for self-certification. However, for many organizations, particularly in developing countries, third-party certification is likely to be essential to gain marketplace credibility. This raises questions regarding the existing certification infrastructure in developing countries and the associated costs. Experience with ISO 9000 shows that the absence of the necessary infrastructure in developing countries reduces the chances of achieving certification. According to some estimates, in the case of ISO 9000, certification audits alone may cost between US$ 10,000 and US$ 30,000 if European or United States consultants are used. Some experts estimate that the costs of ISO 14000 certification could be as much as a third higher than those for ISO 9000, due to the complexity of the ISO 14000 standard and the lack of qualified people.

36. The costs of certification carried out by local ISO registrars in developing countries tend to be much lower.[23] Several developing countries have already established conformity assessment systems to enable certification by local bodies.[24] Pilot projects have played a useful role in this regard. The international value of ISO 14001 certification, however, depends on the confidence that others have in the body that performs the certification and in the process it uses. This may pose problems to exporters in all countries, in particular developing countries. A recent survey shows that non-acceptance is relatively small, but that most of the reported cases take place in developing countries.[25]

37. For widespread confidence in ISO 14001 certification, each country will need to have a rigorous and reliable mechanism to support accreditation of certification bodies and provide assurance that certification is done rigorously and fairly. Several developing countries have accredited certification bodies.

38. Mutual recognition of certification systems could be promoted at the bilateral and regional level as a means of avoiding barriers to trade. Some initiatives are being undertaken to develop an internationally recognized certification system. It is hoped that work on conformity assessment for EMS should result in internationally harmonized accreditation systems for EMS certification bodies, which will support universal recognition of ISO certifications. This work could draw on existing experience in the area of conformity assessment of quality systems, through such

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[22] "Austrian Study Highlights Real Financial Benefit of EMS", 1997, globeNet.

[23] A. Davie,"ISO 14001 Issues for Developing Countries", in Christopher Sheldon (ed.), op. cit..

[24] ISO's TC 207 is not directly responsible for establishing a conformity assessment system to support certification to the ISO 14001 standard. Much of this work is taking place through the ISO Committee on Conformity Assessment (CASCO). In 1996, CASCO formed an EMS working group, whose mandate includes developing general requirements for bodies certifying EMS.

[25] IAF/QSAR survey report, 1997, "The international acceptance of accredited ISO 9000/14000 certificates".

bodies as the Quality System Assessment and Recognition (QSAR[26]) and the International Accreditation Forum (IAF). Once in place, such a system will diminish the need for bilateral or regional agreements on mutual recognition of conformity assessment.

The certification industry

39. ISO 14001 has contributed significantly to the development of an EMS certification industry. It has generated new and often lucrative business opportunities for certification bodies and consultants. This market has traditionally been dominated largely by European and United States companies, which have a significant presence in developing countries and dominate the markets in most.

40. Developing countries have not generally been able to take significant advantage of new opportunities presented by ISO 14001 due to the novelty of EMS in the developing world. Much needs to be done, particularly, in terms of capacity building in order for developing countries to capitalise on such opportunities, and to reduce certification costs through increased South-South cooperation.

IV. TRADE AND INVESTMENT EFFECTS

A. Trade effects

41. The potential effects of ISO 14001 on exports from developing countries are difficult to predict. Some developing country firms may seek ISO 14001 certification as a means to increase export competitiveness and strengthen market positions, even in the absence of explicit pressure from overseas customers. ISO 14001 could potentially be used as a marketing tool both domestically and internationally.

42. In most other cases developing country companies may seek certification in response to requirements from overseas customers to demonstrate an EMS certified to ISO 14001, to supply-chain pressure, or to public procurement policies. ISO 14001 may act as a non-tariff barrier to trade if certification is costly or difficult to achieve.

Overseas customer pressure

43. The closest analogue to environmental management systems can perhaps be found in the ISO 9000 series on quality control. While it is generally recognized that the ISO 9000 series has gained wide acceptance in the market place, it is difficult to gauge its overall importance. Worldwide, there are over 127,000 firms certified to ISO 9000, but 41 per cent of these are in the United Kingdom and 8 per cent in the United States.[27]

44. Furthermore, ISO 14001 may be of lesser relevance to customers than ISO 9000. Customers are not subject to the environmental effects of a company, and in any event, as environmental performance often includes both objective and subjective measures, it is difficult to determine to what extent the customer's environmental

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[26] QSAR is a global scheme, developed by ISO in association with the International Electrotechnical Commission (IEC), to permit certification bodies to gain international acceptance of their competence and the ISO 9000 certificates they issue. QSAR will institute a procedure for international recognition of accreditation bodies, each of which will be assessed by peers in other countries against mutually agreed criteria derived from ISO/IEC guides. A founding membership of 10 accreditation bodies was put in place in 1996. See: UNIDO, op. cit., page 11.

[27] There is no official central record of organizations certified to ISO 9000. However, Mobil Oil has been collecting information from standardization bodies around the world since 1993, known as the "Mobil Survey".

needs have been satisfied.[28] According to this argument, ISO 14001 may be mainly relevant for environmentally sensitive sectors, with relatively little effect on other sectors. Others, however, maintain that, in practice, ISO 14001 would appear to be gaining importance more quickly than the ISO 9000 standard in its early stages of implementation.

45. Finally, demands by customers and importers in developed country markets need not go as far as requesting ISO 14001 certification. In practice, they may request their suppliers: (a) to comply with specific environmental requirements; (b) to have an EMS; (c) to have a certified EMS.

46. An important question in this context is whether having an ISO 14001 certification may lower any burden arising from such requirements. Firms may prefer internationally agreed standards in meeting customer expectations. However, unless ISO 14001 is explicitly required, the costs of setting up an ISO 14001 EMS should be compared to those of compliance with specific environmental requirements of overseas customers.

47. Some experts feel it may take a decade or so to gauge from practical experience the significance of ISO 14001 as a factor in the market place. In Europe and the United States, companies appear to have adopted a "wait and see" attitude, in particular with regard to certification. Most companies that have registered to ISO 14001 had an EMS in place, implying relatively low incremental costs.

Effects through the production chain

48. ISO 14001 encourages companies to take into account the environmental impacts of their suppliers and contractors, as the standard states that a company should take into account those environmental aspects an organization can control and over which it can be expected to have an influence.[29] For this reason, companies that have adopted an EMS themselves may require their suppliers to pay more attention to environmental issues. This may in some cases lead to input substitution, or placing special environmental requirements on developing country producers, which may ultimately result in the adoption of an EMS by those producers.

49. Companies in developed countries have been the first to implement EMS. In the short term, therefore, pressure on companies in developing countries to implement EMS is likely to run through the supply chain of TNCs and their subsidiaries. In the long term, companies in developing countries may also face supply-chain pressure from local companies that have adopted an EMS.

50. The extent of such effects remains uncertain. On the one hand, effects may be significant, in particular because, at least in principle, each company in the production chain could be affected. In practice, however, a company with an ISO-14001 certified EMS may require specific environmental performance from its suppliers only as far as the supplier's performance is likely to have an impact on the firm's ability to comply with its stated targets and goals. For example, if the stated target of a certified firm is waste reduction, the firm may ask its suppliers to switch to more environmentally friendly packaging.[30]

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[28] John Henry, "ISO 14000 Series Standard and Its Impact on Industry", paper delivered at the workshop on ISO 14000 and its Impact on Industry and Trade, Seoul, 29 November 1995.

[29] TC 207 dropped the requirement of evaluating a supplier's adherence to environmental management standards. However, some provisions to a certain extent urge the consideration of supplier performance. For example, the EMS guidance document requires that "environmental records which document the evidence of ongoing operations of the EMS should cover pertinent supplier and contractor information". One key principle for managers implementing an EMS is to "encourage contractors and suppliers to establish an EMS". UNDP, op. cit., page 12.

[30] UNCTAD, TD/B/WG.6/9.

Public procurement

51. Ministries and other government agencies in some countries may consider ISO 14001 certification as a condition for participation in government procurement bids. Examples sometimes cited include the United States Department of Energy and Department of Defense. Such practices may have significant effects on both trade and investment and require further examination. An exchange of information on national policy priorities would be useful in this respect.

52. Some take the view that ISO 14001 should not become mandatory, as this could undermine the value of the standard. For example, in Australia, the government sector recently dropped requirements for ISO 9000 certification, since experience had indicated that making certification mandatory for government purchasing caused significant market distortions, as small companies could not afford certification and, most significantly, competition was reduced.[31]

B. Investment effects

53. The Expert Meeting is inter alia required to examine the possible impact of environmental management standards on investment. Little has been said on the possible investment impact of ISO 14001 on developing countries, apart from the enumeration of possible advantages that investors may derive from having an internationally recognized EMS in place, which could include improved investor confidence, access to capital and preferential insurance rates.

54. From a sustainable development perspective, the two principal concerns of developing countries with regard to foreign direct investment (FDI) are (a) attracting FDI as a source of long-term capital, and (b) enhancing the role of FDI in advancing social and environmental objectives. With regard to (a), EMS standards are unlikely to have significant effects on FDI flows. Creating appropriate infrastructure for participation in ISO 14001 could perhaps help to attract FDI in certain environmentally sensitive sectors, as could be the case if TNC subsidiaries impose certain environment-related requirements on local suppliers, or if investors setting up joint ventures require their counterparts to have ISO certification. With regard to (b), an interesting issue is whether and to what extent encouraging ISO 14001 certification could help developing country Governments enhance the contribution of FDI to environmental management and sustainable development objectives. It should also be noted that TNCs can play an important role in promoting EMS in developing countries.

V. THE CASE OF SMALL AND MEDIUM-SIZED ENTERPRISES (SMEs)

55. The trade and environment debate has highlighted the special conditions of small and medium-sized enterprises (SMEs) in responding to environmental challenges, particularly in developing countries. At the same time, it may be possible for SMEs to achieve significant environmental improvements through better housekeeping practices, provided the appropriate supporting infrastructure is in place. In this context, it is important to examine the role of EMS in enhancing the environmental management of SMEs in a cost-effective manner, as well as the special conditions and needs of SMEs in establishing an EMS.

56. Under EMAS, the particular difficulties that SMEs may encounter have been explicitly recognised. Thus, SMEs in the European Union benefit from special assistance to facilitate their participation in EMAS. This includes information, training, and technical support. SMEs may also benefit from a simplified system of verification and inspection, as well as an exemption from having to produce annual environmental statements.

57. So far, ISO has not recognized a need to develop a special EMS standard for SMEs. However, an ISO task force has been established on ISO 14000 and SMEs. The task force has considered several country case studies.

58. Most of the Latin American studies found that the majority of SMEs supply the

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[31] Dianne Gayler, "Implementation of Environmental Management Standards in Australia", paper presented at the APEC Seminar.

domestic market, which is not very demanding in the context of environmental performance. Most SMEs see environmental legislation as the main motivation for taking environmental measures. Awareness of the existence of ISO 14000 was found to be very low, and commercial pressure to implement an EMS almost non-existent. The findings of a study on SMEs in South Wales, United Kingdom, are very similar.

59. Most studies confirm that SMEs face specific problems in establishing EMS. Lack of financial resources and qualified personnel, difficult access to information, resistance to change, and the related costs of setting up the system and certification are major constraints for SMEs. A recurrent theme is the lack of trained environmental personnel. The studies also show that very few SMEs in developing countries have an environmental policy in place and that SMEs face particular difficulties with the comprehension and interpretation of ISO 14001, with the identification of environmental legislation, and with the identification of environmental aspects and impacts of their activities.

60. In the short run, the implementation of EMS by SMEs will depend largely on demands by large organisations, e.g. customers in overseas markets or large firms in developing countries, in particular TNC subsidiaries imposing requirements on local suppliers. Large organisations, however, can also assist SMEs in complying with the requirements of ISO 14001. In Mexico, for example, an important concept in the Guadalajara pilot project on ISO 14000 for SMEs is the cooperation between large and small enterprises. Large companies are assisting SMEs in implementing EMS and in improving their environmental performance based on common objectives of customers and suppliers. Each of the 12 large companies participating in the project are assisting two SME suppliers, apart from providing financial support to the project. The project results will be used to develop a regulatory framework for the national implementation of ISO 14001. Similarly, in Malaysia a TNC is providing technical assistance under a "mentor" programme to make it possible for a small firm, a local supplier, to get certified.

61. In addition, cooperation among SMEs may assist in resolving certain problems and in reducing costs. For example SMEs in specific sectors and geographical areas could cooperate in identifying the environmental aspects and impacts of their activities and information on legal requirements. Cooperation in staff training could also be explored.

VI. EXPERIENCES WITH THE IMPLEMENTATION OF ISO 14001 IN DEVELOPING COUNTRIES

62. This section provides a preliminary survey of experiences with ISO 14001 implementation in developing countries with a view to stimulating an exchange of national experiences in both developed and developing countries. UNCTAD and UNDP are undertaking a joint project on environmental management systems in selected developing countries. UNCTAD is also undertaking a joint project with the Copenhagen School of Business, on corporate environmental management systems .

63. There is considerable interest in ISO 14001 in Asia and Latin America. Many countries in these regions seem to have taken a proactive approach, with pilot programmes already in place. Trade considerations seem to play an important role.[32]

64. In several Asian developing countries pilot, schemes were put in place prior to the official publication of ISO 14001 to prepare the national certification bodies and industry for the arrival of the standard. While firms face the challenge of establishing an EMS with a view to seeking third party certification, local

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[32] Trade considerations may also play an important role in several developed countries. A study on Japan shows that over 60 per cent of the more than 300 companies that had registered their EMS against ISO 14001 by July 1997 (this number is expected to double by the end of 1997) were in the electric and machinery sectors, and registration was growing fastest in those fields relating to international trade. Keiko Terui, "Environmental Management System in Japan", paper presented at the APEC Seminar, and "Japan Continues to Position Itself as Major Player in ISO 14000 Activities", July 1997, globeNet.

certification bodies, particularly those in developing countries, have to equip themselves in order to compete with the many foreign certification bodies that operate in their countries. This is particularly so with ISO 14001 due to the novelty of EMS in many of these countries. Pilot schemes provide opportunities for mutual learning by the local certification bodies and firms in interpreting the requirements of ISO 14001. Interpretation was a problem common to both, there was therefore a need to work together to develop a common understanding. This helped ensure a smooth transition from a firm's implementation of an EMS to its formal certification.

65. The Republic of Korea initiated a pilot certification scheme in 1994. The objective was to ensure that the infrastructure required to operate an EMS certification system would be in place by the time the ISO 14001 standard was published.[33] In 1995, the Korean Standards Association (KSA) set up training activities jointly with certification bodies from the United Kingdom. Two hundred preliminary auditors were trained, and experimental certification audits were carried out to assist companies in setting up their own EMS. Fifty-six companies in the chemical, electronics, cement and construction sectors have acquired ISO 14001 certificates, and a significant number of companies (mostly large ones) are preparing for certification. Certified enterprises can be divided into three categories: (a) environmentally sensitive industries (e.g. chemicals) seeking to improve their environmental image; (b) export-oriented industries (e.g. electronics) preparing to deal with potential trade barriers; and (c) large firms committed to maintaining high environmental standards and meeting shareholders' expectations.

66. The Standards and Industrial Research Institute of Malaysia (SIRIM) launched a pilot EMS programme in December 1995.[34] The objectives were to improve understanding of the ISO 14001 standard and problems during its implementation, to assess the costs and benefits of implementing the standard, to gain EMS auditing experience and to determine training requirements. Thirty-two companies applied to join the programme, representing a broad range of sectors, such as rubber and rubber products, palm oil, and electrical, electronic, chemical and petrochemical industries. Participating companies with an EMS in place can receive trial audits free of charge. At the time of drafting, seven companies have been certified under the scheme and others are in the process of doing so.

67. The Singapore Productivity and Standards Board (PSB) embarked on a pilot scheme in 1996 involving various industrial sectors, including electronics and chemicals. Five companies have now been certified. The Government has played a dominant role in promoting ISO 14001, including providing grants to defray costs for companies seeking certification. A support programme has also been developed for SMEs whereby training is provided to reduce consultancy costs with additional grants for consultancy and certification. Specific training and short-term courses are also conducted by local tertiary institutions.

68. The Hong Kong Productivity Council (HKPC) initiated various EMS pilot programmes.[35] The first, a joint effort with the Canadian Standards Association, was launched in November 1995; 11 companies participated. Two other pilot schemes were started in October 1996. One was sponsored by nine TNCs; eight SMEs in the non-manufacturing sector participated. The other, using government funds, was joined by 12 SMEs from the manufacturing sector. By April 1997, four companies had been certified to ISO 14001. HKPC expects 11 to 15 companies to be certified by end 1997, increasing to 50 by end 1998.

69. In China, the Government is encouraging the adoption of ISO 14001 in state and private enterprises in order to improve trade opportunities and contribute to the

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[33] Choong Ho Lee, "Implementation of Environmental Management System in Korea", paper presented at the APEC Seminar.

[34] Norafiza Saim, op. cit.

[35] Shirley S.L. Lee, "Hong Kong's Experience with the Promotion and Implementation of ISO 14000: Current Status and Future Trends", paper presented at the APEC Seminar.

Government's environmental policies. In January 1996, the National Environmental Protection Agency (NEPA) established the China Center for Environmental Management Systems (CCEMS), which aims to improve environmental protection programmes in China, to raise the technical standards in pollution control, and to increase the level of public education. ISO 14001 should facilitate fulfilment of these aims. NEPA has developed pilot programmes for ISO 14001 certification, training programmes for auditors and companies, as well as general awareness-raising programmes. The China National Steering Committee on Certification of Environmental Management System, which was established in May 1997 and involves 33 ministries and state bureaus, will be active in the development and supervision of policies on certification and accreditation of EMS. The Committee aims to take into account international standards in order to facilitate mutual recognition. So far, eight Chinese companies have receive ISO 14001 certification.[36]

70. Studies on Brazil also show an increasing interest in EMS and ISO 14001 certification, in particular by subsidiaries of multinationals in environmentally sensitive sectors, such as pulp and paper, petrochemicals and mining, and which are active in the international market. In April 1997 four Brazilian companies obtained ISO 14001 certification and eight Brazilian companies were about to be ISO 14000 certified, while 50 companies had adopted EMS that are "ISO 14000 compatible".[37] In Argentina, ten firms had obtained ISO 14001 certification by 31 March 1997.

71. In general, awareness of ISO 14000 standards in Africa is very low. In some countries, however, there appears to be an emerging interest. South African companies are showing an increasing interest in EMS. In a 1996 survey, 51 per cent of companies expressed an interest in ISO 14001 certification. In April 1997, five companies obtained ISO 14001 certification, i.e. one car manufacturer and four public utility companies. The main reasons cited for adopting ISO 14001 are prevention of possible litigation and maintaining international competitiveness. Industry is pressing for self-regulation through formal international standards like ISO 14001.[38]

72. Some larger companies in Zambia and Zimbabwe are following the developments in the area of ISO 14000 standards closely. It is reported that some that already have an EMS in place are currently bringing these into line with ISO 14001. Potential international trade pressure is the most important factor for adoption of EMS. Industry is lobbying the government for special incentives and benefits for companies that adopt an EMS.[39]

73. Regional initiatives are also under way, in particular within the Association of South-East Asian Nations (ASEAN). A technical working group has been formed under the ASEAN Consultative Committee for Standards and Quality (ACCSQ) to coordinate efforts and formulate regional programmes on ISO 14000. Interregional cooperation has also been initiated. Standards and conformance is a priority area for cooperation between ASEAN and the Closer Economic Relations (CER) countries (Australia and New Zealand) under the AFTA-CER Linkage. This includes exchange of information and collaborative work on ISO 14000. Such regional partnership arrangements could significantly assist developing countries in building individual capacities in this regard.

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[36] Dr. Ye Ruqiu, NEPA, China, personal communication, 1997. "China Begins Third Phase of ISO 14001 Program", "China Establishes Advisory Committee for EMS Accreditation", 1997, globeNet.

[37] CBI News Bulletin, June 1997, Centre for the Promotion of Imports from developing countries, Rotterdam, Netherlands.

[38] CBI News Bulletin, June 1997, op. cit. "South African Companies Push for ISO 14000 in Lieu of 'Draconian' Legal System", May 1997, globeNet.

[39] P. S. Kupakuwana, Standards Association of Zimbabwe, and J. Chishiba, Environmental Council of Zambia, personal communication, 1997.

VII. DEVELOPING COUNTRIES' NEEDS

A. Policy choices

74. Governments and the business community face important policy choices in relation to environmental management standards, in particular with regard to implementation issues. Difficulties of developing countries in formulating national policies on EMS standards may be significant, while the associated costs and benefits of ISO 14001 are difficult to predict. The implementation of the ISO 14000 series is not yet mature, and the full implications of EMS are not completely understood. In addition, there is the question of the extent to which it is meaningful (including for bilateral and multilateral aid agencies) to promote EMS certification in countries where many firms do not even have basic management systems. In many developing countries, a gradual approach to EMS, focusing on environmentally sensitive sectors, may be appropriate and the need for third party certification secondary.

75. To an extent, interest in EMS in developing countries and countries in transition has emerged in response to the increasing use of EMS in the developed countries. Three points are important in this respect. First, developed countries have played a key role in elaborating EMS, as well as in drafting the ISO international standards; developing countries, on the contrary, have generally not participated actively in the ISO process. Secondly, the importance that EMS will acquire in developing countries will depend to a large extent on whether or not ISO 14000 standards will become an important factor in the market place in the developed countries. Thirdly, many developing country firms wanting to participate in ISO 14000 tend to depend largely on consultancy services provided by developed countries, and the success of ISO 14000 registration with local certification bodies in developing countries will depend largely on the acceptability of such certification in the importing country. Several developing countries, in particular in Asia and Latin America, are nevertheless adopting a proactive approach to EMS standards.

76. Since national policies play an important role in preventing ISO 14001 from creating barriers to trade, it is important to formulate priorities based on objective information and analyses. Potential trade effects tend to be a key factor in determining the appropriate timing and sectoral priorities in implementing national standards and promoting the wider use of EMS in developing countries. Setting up certification infrastructure may require considerable investments on the part of the Government but reduces costs for individual organizations. If ISO 14001 were to become important in the market place, developing countries that fail to provide the necessary infrastructure on a timely basis could miss out on trading opportunities, and the export competitiveness of their companies could decline. In addition, as has been indicated in this report, EMS may bring benefits to both companies and Governments.

B. Enhancing the implementation of EMS standards

77. The successful implementation of EMS in developing countries requires action by the business community, Governments and others at the national level. In addition, policies and measures at the bilateral and/or multilateral levels, including cooperation in the area of technical assistance and capacity-building, may assist developing country companies and their Governments in setting up EMS. In this context, experts could discuss a number of issues, particular those stated below.

Training and awareness-raising

78. Training and awareness-raising efforts are needed to demonstrate the need for and the potential benefits of environmental management standards, particularly in developing countries. These could target local training and certification bodies, consultants and business leaders. Training and awareness-building activities could also be undertaken at the regional or subregional levels. In the short term, these efforts are important, particularly in developing countries with export-led growth strategies.[40] An examination of national experiences as well as an identification

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[40] UNDP, op. cit., page 19.

of training packages and facilities would be useful. Such examination could pay particular interest to possibilities for South-South cooperation.

Dissemination of information

79. Trade considerations play an important role in the implementation of ISO 14001 and the establishment of certification facilities in developing countries. Potential trade effects also determine the appropriate timing and sectoral priorities in implementing national standards. Governments, particularly those with export-led growth strategies, need to anticipate future market trends.

80. Timely and objective information on trends in the use of ISO 14000 in major markets is essential in this regard, in particular for sectors where ISO 14001 is most likely to become an important factor in the market place (e.g. electronics or engineering) or which are most likely to benefit from EMS implementation because of potential environmental impacts (e.g. oil and gas, power generation and mining). Technical assistance activities could identify sources for such information, and inter-firm networking may also be useful in this context. Experts may wish to identify information requirements and examine ways and means to promote the provision of such information to developing country Governments and firms.

Infrastructural requirements

81. Experts may wish to identify the basic requirements in terms of infrastructure, e.g. availability of consultants and/or credible certification bodies, required for companies to participate successfully in ISO 14001. This may assist national Governments in designing national implementation policies. It may also be important to examine how multilateral and bilateral aid agencies can assist developing countries in this regard.

Government support

82. Governments can play a dominant role in providing an "enabling" environment for the implementation of ISO 14001, particularly in developing countries. For example, this report shows that Governments in the export-orientated economies of Asia have taken significant steps to promote ISO 14001 standards by establishing infrastructure and providing incentives, comprehensive support programmes for SMEs and financial assistance.

83. Some apportioning of costs between the public and private sector for the promotion of ISO 14001 may be appropriate. In a recent UNIDO survey, most respondents felt that the Government should bear the costs of awareness-building, leaving companies with the implementation and certification costs. Identifying appropriate government support, however, depends on national circumstances and may be a complex issue. An exchange of views on this issue may be useful.

Pilot schemes

84. Experience seems to indicate that pilot schemes are effective means to improve understanding of EMS and to gain practical experience. They provide opportunities for mutual learning by certification bodies and the business community. In some cases pilot schemes have been set up in cooperation with certification bodies in developed countries. Multilateral and bilateral aid agencies could also play a role. Finally, South-South cooperation could be promoted to take advantage of the experience acquired by some developing countries. An exchange of national experiences in this area could be useful.

Industry cooperation

85. The private sector, in particular TNCs, can play an important role in promoting the implementation and improvement of EMS in developing countries. e.g. through cooperation between companies in developed and developing countries. Of particular relevance is cooperation between companies in developed countries and their suppliers in developing countries, and between subsidiaries of TNCs and their local suppliers, in particular SMEs. Experts may wish to examine ways and means to promote industry cooperation in the context of EMS standards.

Access to and transfer of technologies

86. As ISO 14001 is not a performance standard, its implementation does not necessarily require investment in equipment or technology.[41] In practice, however, access to environmentally sound technologies may be essential for the successful implementation of EMS standards. Similarly, the requirement of "continual improvement" may eventually require a company to keep up with technological innovations. Promoting the dissemination of technologies is therefore of key importance, and issues of access to and transfer of technologies may need to be addressed.

C. Areas for future work

Enhancing the effective participation of developing countries in ISO standard setting

87. Enhancing the effective participation of developing countries in ISO standard setting remains a priority and a condition for the development of truly international standards. While progress has been made through the work of ISO's Programme for Developing Countries (DEVCO), much more may be needed. Effective participation requires a broad range of measures, including support for capacity-building. It may also be appropriate for ISO to review its internal processes to facilitate a wider representation and effective participation of developing countries.

Enhancing developing country participation in the growing market for environmental services

88. Experts could examine ways and means to promote developing country participation in the growing market for services associated with the wider use of EMS (consultants, training, certification), in particular through regional cooperation among developing countries.

Future work on EMS standards

89. The revision of the ISO 14001 and 14004 standards in 1999 may provide an opportunity for further developments in EMS standards. For example, would it be necessary and desirable to develop a specific standard for SMEs? Deliberations by experts may help to develop a better understanding of these issues.

Environmental management standards: the development perspective

90. Experts could propose areas for further work to assist developing countries in better understanding and taking full advantage of the opportunities offered by EMS standards, as well as recommend further activities in UNCTAD.

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[41] Under the European Union's EMAS Regulation (Art. 3.a), however, organizations should aim to reduce environmental impacts to levels not exceeding those resulting from the "economically viable application of best available technology" (EVABAT).